

Abstract Submitted  
for the MAR06 Meeting of  
The American Physical Society

**Emergent Structures in Dissipative Wave-Particle Systems<sup>1</sup>**

DAVIT SIVIL, ALFRED HUBLER, Center for Complex Systems Research, Department of Physics, University of Illinois at Urbana-Champaign — We study the motion of a particle with mass  $m$  on a vibrated string of length  $L$ . We assume there is no friction force between the particle and the string. The string is sinusoidally forced at both ends. We find that the particle has attractors located at  $x=L/2 - n\pi c/2\omega$ , where  $\omega$  is the frequency of the waves on the string, and  $n \in \mathbb{Z}$ . We also study the same system with friction and multiple driving frequencies. We also compared our results with numerical simulations

<sup>1</sup>The research is supported by the National Science Foundation Grant No. NSF PHY 01-40179, NSF DMS03-25939. ITR, and NSF DGE 03-38215.

Davit Sivil  
Center for Complex Systems Research, Department of Physics,  
University of Illinois at Urbana-Champaign

Date submitted: 06 Jan 2006

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